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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/727,615	12/01/2000	Marie Angelopoulos	YOR919960050US3	4765

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EXAMINER

KOPEC, MARK T

ART UNIT	PAPER NUMBER
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1751

DATE MAILED: 02/28/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Applicati n N .

09/727,615

Applicant(s)

ANGELOPOULOS ET AL.

Examin r

Mark Kopec

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 and 22-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

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This application is a CON of S.N. 09/268,527 (filed 3/12/99, now U.S. 6,210,606), which application is a CON of S.N. 08/620,618 (filed 3/22/96, now U.S. 5,932,143). Claims 1-24 are currently pending.

The examiner will consider information which has been considered by the Office in a parent application when examining (A) a continuation application filed under 37 CFR 1.53(b) or filed under former 37 CFR 1.60, (B) a divisional application filed under 37 CFR 1.53(b) or filed under former 37 CFR 1.60, or (C) a continuation-in-part application filed under 37 CFR 1.53(b). Such information need not be resubmitted in the continuing application unless the applicant desires the information to be printed on the patent.

There is no Information Disclosure Statement in the file. If one is to be filed in this application, it should be done no later than the response to this Office Action.

The typed replacement for Table 1 has been received.

The amendment to page 1 of the specification is entered. Applicant should provide an amendment updating the information (copending applications) appearing at **page 20** of the specification.

Restriction to one of the following inventions is required under 35 U.S.C. 121:

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I. Claims 1-20 and 22-24, drawn to structures comprising a polycrystalline material and an additive/plasticizer, classified in class 252, subclass 500.

II. Claim 21, drawn to a structure comprising a polycrystalline wherein the additive has been removed, classified in class 528, subclass 210.

The inventions are distinct, each from the other because of the following reasons:

Inventions of Group I and Group II are related as mutually exclusive species in an intermediate-final product relationship. Distinctness is proven for claims in this relationship if the intermediate product is useful to make other than the final product (MPEP § 806.04(b), 3rd paragraph), and the species are patentably distinct (MPEP § 806.04(h)). In the instant case, the intermediate product is deemed to be useful as a conductive composition containing the additive, and the inventions are deemed patentably distinct since there is nothing on this record to show them to be obvious variants. Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance,

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if the examiner finds one of the inventions anticipated by the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II (the searches are not coextensive), restriction for examination purposes as indicated is proper.

This application also contains claims directed to the following patentably distinct species of the claimed invention:

- 1) compositions comprising **precursors** to electrically conductive polymers,
- 2) compositions comprising **electrically conductive** polymers.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species (for both groups) for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claims 1, 3-7, 9-10, 12-24 are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are

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generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

During a telephone conversation with Dr. Daniel Morris on 2/26/03 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-20 and 22-24. Affirmation of this election must be made by applicant in replying to this Office action. Claim 21 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being

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drawn to a non-elected invention. It is noted that **electrically conductive compositions** (species) was also elected.

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(I).

Claims 3 and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The amended terminology appearing in claim 3 is confusing. Applicant is suggested to change the language to the following:  
--wherein said additive is a plasticizer--.

Claim 24 is incorrectly specified as "A process". The claim should be amended to --A structure--.

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Claims 1-20, 22-24 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of United States patent 5,932,143. Although the conflicting claims are not identical, they are not patentably distinct from each other because both the instant claims and the claims of 5,932,143 are drawn to polycrystalline conductive polymers containing specific plasticizer additives. The instant claims are not unobvious in view of claims 1-8 of 5,932,143. They are merely broader in scope.

Claims 1-20, 22-24 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-7 of United States patent 5,928,566. Although the conflicting claims are not identical, they are not patentably distinct from each other because both the instant claims and the claims of 5,928,566 are drawn to polycrystalline conductive polymers (at least one crystal grain) containing specific plasticizer additives. The instant claims are not unobvious in view of claims 1-7 of 5,928,566. They are merely broader in scope.

Claims 1-20, 22-24 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of United States patent 6,210,606. Although the conflicting claims are not identical, they are not



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patentably distinct from each other because both the instant claims and the claims of 6,210,606 are drawn to polycrystalline conductive polymers containing specific plasticizer additives. The instant claims are not unobvious in view of claims 1-8 of 6,210,606. They are merely broader in scope.

Claims 1-20, 22-24 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-52 of copending Application No. 09/208,528. Although the conflicting claims are not identical, they are not patentably distinct from each other because both the instant claims and the claims of 09/208,528 are drawn to polycrystalline conductive polymers (at least one crystal grain) containing specific plasticizer additives. The instant claims are not unobvious in view of claims 1-52 of 09/208,528. They are merely broader in scope.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA

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1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in

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order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-20, 22-24 are rejected under 35 U.S.C. § 103(a) as being unpatentable over WO 92/22911 in view of either the Handbook of Common Polymers, Roff, W. J., et al. editors, 1971, Butterworth & Co., pp. 515-517 (hereinafter "the Handbook") or Kirk-Othmer, Encyclopedia of Chemical Technology, 3rd ed., 1982, John Wiley & Sons, pp. 111-115.

The scope and contents of the prior art are determined as follows:

WO 92/22911 teaches electroconductive structures comprising, inter alia, electroconductive polymers such as polyaniline and additives such as plasticizers (p. 16, line 4, through p. 23, line 12; and p. 36, line 21, through p. 37, line 16). Different articles are taught at p. 11, line 17, through p. 12, line 20.

The Handbook teaches plasticizers such as glycerol triacetate (a.k.a., "triacetin") and epoxidized soyabean oil at p. 516.

The Encyclopedia teaches plasticizers such as epoxidized soybean oil and glycol derivatives at p. 113.

The differences between the prior art and the claims at issue are ascertained as follows:

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WO 92/22911 may not specifically teach the particular plasticizers presently claimed as additives. Nevertheless, either the Handbook or the Encyclopedia documents the fact that glycerol triacetate, epoxidized soybean oil, glycol derivatives, and other compounds are well-known plasticizers for polymers. The person skilled in the art is deemed to have been aware of those well-known materials and their uses.

The teachings of the references would include that combination among a limited number of possibilities in the sections cited above. One skilled in the art therefore would have had a reasonable expectation of success with respect to the invention as presently claimed.

WO 92/22911 may not specifically teach the polycrystalline, amorphous, interstitial regions, isotropic, crystallinity, physical properties, crystallite sizes, or structures presently claimed. Nevertheless, the reference is deemed to teach or suggest the claimed composition; the applicant or applicants need to show that his, her, or their invention is actually different from and unexpectedly better than the prior art.

With respect to claims requiring ranges or proportions of ingredients, no criticality has been shown for the presently claimed ranges over the closest prior art. Optimization of results would have been obvious to one skilled in the art. Overlapping ranges also may establish prima facie obviousness.

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The level of ordinary skill in the relevant art is resolved with the finding that, based on the teachings of WO 92/22911 in view of either the Handbook or Encyclopedia as a whole, it would have been obvious to one of such skill for a structure to fall within the limitations presently claimed because WO 92/22911 teaches structures comprising electroconductive polymers such as polyaniline and additives such as plasticizers, while the Handbook and Encyclopedia both document the fact that certain plasticizers are well-known in the art.

Claims 1-20, 22-24 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over MacDiarmid et al (5,484,884).

MacDiarmid discloses high molecular weight polyaniline films. Included in the invention are substantially crystalline fibers and films obtained by extraction with THF/NMP (Col 2, lines 40-49; example 1). It is the examiner's position that the THF/NMP meets each of the instant requirements regarding the "additive" as such provides crystallinity to the polyaniline. Also, the disclosed polymer would inherently meet each of the claimed limitations regarding amorphous regions and isotropic conductivity due to its partially crystalline nature.

The reference is anticipatory.

In the alternative that any minor modifications are necessary to meet the claimed limitations, such as variation in

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treatment with THF/NMP to tailor crystallinity, such modifications are within the purview of the skilled artisan.

Claims 1, 3, 5-7, 9, 12-17 and 19-20 and 22-23 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Epstein et al (4,913,867).

Epstein et al disclose stretch-oriented polyaniline films and fibers. The produced polyaniline materials are oriented and crystalline (Abstract). Epstein also teaches the addition (and subsequent removal) of plasticizers such as NMP (Col. 2, lines 60-65).

The reference is anticipatory.

In the alternative that any minor modifications are necessary to meet the claimed limitations, such as variation in the amount of plasticizer, such modifications are within the purview of the skilled artisan.

Applicant's arguments filed 12/01/00 have been fully considered but they are not persuasive.

With respect to each of the prior art rejections, applicant argues that there is no reference to a polycrystalline material having interstitial regions containing amorphous material as instantly claimed. Therefore, applicant states that there is no motivation or incentive for making the instantly claimed

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polycrystalline material having interstitial regions containing amorphous material.

The examiner respectfully maintains that although the above references does not utilize the exact terminology as applicant's utilize, the references do suggest to one of ordinary skill in the art that intrinsically conductive polymers such as polyaniline may be mixed with various plasticizers such as glycerol triacetate, epoxidized soybean oil, glycol derivatives, etc. Both MacDiarmid et al and Epstein et al specifically disclose intrinsically conductive polymer/plasticizer combinations. Such a combination would inherently result in compositions containing all of the instantly recited properties.

Applicant's statement that they "...have shown that they have unexpectedly formed a polycrystalline material" is not found persuasive by the examiner. Specifically, the prior art clearly teaches that beneficial results are obtained when utilizing plasticizers with polymeric materials. The function of plasticizers is to tailor properties in order to achieve some specific desired result. Outside of the allowed claims in the parent applications, applicant has not shown that any specific types of plasticizers are unexpectedly better than other when used in combination with intrinsically conductive polymers, nor are any claims limited to any specific types of plasticizers.



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It is noted that at pages 17-18 of the instant specification, applicant alludes to experiments containing various additives (polyglycol diacid, 3,6,9-trioxaundecanedoic acid, etc).

However, the results of these comparative examples are not disclosed. Applicant may provide a 1.132 Declaration with the results of such testing so the examiner may determine unexpected/superior results for the addition species of plasticizers.

Claims 1-20 and 22-24 are rejected under 35 U.S.C. 102(e) as anticipated by Angelopoulos et al (5,804,100).

Angelopoulos et al discloses deaggregated electrically conductive polymers and precursors thereof. The conductive polymer compositions comprise polyaniline and additive surfactants such as glycerol esters of fatty acids (Col 8, lines 15-20). The reference specifically teaches that the formed structures possess metallic islands increased above 200-300 Angstroms (Col 6, lines 15-35). The examiner construes this teaching, in combination with the teaching of identical polymers and additives, as inherently meeting the claim limitations regarding "polycrystalline".

The reference is anticipatory.

In view of the foregoing, the above claims have failed to patentably distinguish over the applied art.

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Applicant is reminded that any evidence to be presented in accordance with 37 C.F.R. 1.131 or 1.132 should be submitted before final rejection in order to be considered timely.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Kopec whose telephone number is (703) 308-1088. The examiner can normally be reached on Monday-Thursday from 7:30 AM - 6:00 PM.

If reasonable attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Yogendra Gupta, can be reached on (703) 308-4708.

The official fax phone numbers for this Group are (703) 305-7718 and 305-3599 (for after-final submissions).

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.

  
Mark Kopec  
Primary Examiner

Mark Kopec  
2/26/03